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SEASONAL ANALYSIS OF GASTROINTESTINAL HELMINTHIC FAUNA IN OVIS BHARAL

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ABSTRACT

The objective of the present investigation was to analyze the seasonality of gastrointestinal helminthic fauna of sheep from Pune district. This study was conducted to determine the seasonal occurrence of gastrointestinal helminthes (cestode, trematode and nematode) of sheep. A survey of the prevalence of gastro-intestinal helminth parasites in 180 sheeps, (Ovis bharal) was conducted in different area of Pune district (M.S.) India during the period of February, 2018 to January, 2019. The high prevalence of Helminth parasites were recorded in Monsoon season (76.67%) followed by winter season (46.67%) whereas infection was low in summer season (21.67%) respectively. The results of present study clearly indicate that environmental factors and feeding habitat are influence the seasonality of parasitic infection either directly or indirectly. The data presented here may help to the sheep owners to understand the helminthic faunal dynamics of Ovis bharal during the different seasons in the year.

KEYWORDS: Gastrointestinal Helminths, Pune, Ovis bharal, Seasonal analysis.

INTRODUCTION

Rearing of sheep provides source of revenue to millions of people, particularly to the deprived and downtrodden population in the developing and underdeveloped countries. Parasitic diseases have got unique importance as they cause high morbidity and huge economic losses (ranging from 20 to 25 %) in the form of low wool, meat and milk production, retarded growth, morbidity and mortalities (Gupta 2006). Among parasitic diseases, helminths are the major constraint in survival and productivity of these animals. Helminthiasis is a chief cause of monetary losses in ruminants worldwide. (Ferre et.al., 1995). Gastrointestinal parasitic infection is prime cause of failure in sheep production. The helminthes are one of the most important disease-causing agents in veterinary medicine, especially in livestock, and lead to economic losses as a result of a decrease in meat, milk, or wool production. Most gastrointestinal helminths infect animals via the ingestion of infective-stage larvae or eggs. The eggs and larvae are excreted with the host's feces into the environment and become a source of transmission. Strongyle nematodes of the order Strongylida are an important group of gastrointestinal helminths that significantly affect the health of ruminants, especially in tropical areas.

Sheep and goats have enormous share in economy of developing countries like India as they provide a major source of income especially to marginal farmers and landless labors. Helminthic infections are a worldwide problem for small and large animals like sheep and goat. The direct losses caused by these parasitic infections are attributed to acute illness and death, premature slaughter and rejection of some parts at meat inspection. Indirect losses include the diminution of productive potential such as decreased growth rate, weight loss in young growing animals and late maturity of slaughter stock. Gastrointestinal (GI) nematodes rank highest on global index with Haemonchus contortus on top (Perry et al. 2002). There are many reports of prevalence of helminthes in small ruminants from India (Thapar 1956; Singla 1995; Singh et al. 1997; Katoch et al. 1998; Godara and Sharma 2010) and different parts of Jammu and Kashmir (Makhdoomi et al. 1995; Khajuria and Kapoor 2003; Yadav et al. 2006; Shahnawaz et al. 2011).

This study was planned to record the prevalence of helminth parasites collected from the intestine of Ovis bharal. Seasonal prevalence were studied throughout the year dividing into three seasons.

MATERIALS AND METHODS

Study area- Pune district is located between 17 degrees 54′ and 10 degrees 24′ North latitude and 73 degrees19′ and 75 degrees 10′ East longitude. The district has geographical area of 15.642sq.km. It is the second largest district in the state and covers 5.10% of the total geographical area of the state. The landscape of Pune district is distributed triangularly in western Maharashtra at the foothills of the Sahyadri Mountains and is divided into three parts: “Ghatmatha”, “Maval” and “Desh”. The district forms a part of the tropical monsoon land and therefore shows a significant seasonal variation in temperature as well as rainfall conditions. Climate of the western region of Pune is cool whereas the eastern part is hot and dry. The monsoon arrives in the month of June, with the maximum intensity of rainfall during the month of July and August. April and May are the hottest months in the district. Maximum temperature during these months often rises above 38°C. December and January are the coolest months, when average temperature falls as low as 11°C. The animal husbandry is one of the most prominent occupations in this area due to the ideal geographical conditions. The status of traditional farms in Baramati, Maval, Bhor, Indapur as sampling regions of Pune district was determined in the course of this research in 2018-2019 across three seasons, which included field and laboratory studies.

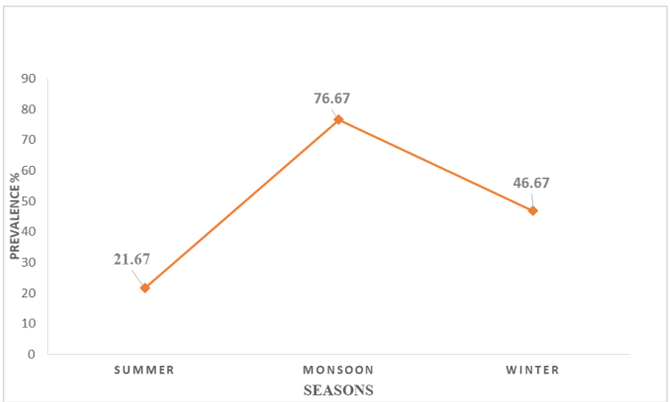
Sample collection and examination techniques- The study was conducted from February-2018 to January-2019 covering different locations in Pune district. The period of study was divided into three main season's viz. Summer (February-2018-May-2018), Monsoon (June-2018-September-2018) & Winter (October-2018-January-2019). During the period of study regularly the intestines of sheep were collected irrespective of sex and age directly from the slaughter houses from study area. The collected intestines were counted and kept in polythene bags separately and labelled with all required information. Then the collected samples from in and around study area of Pune region were transported to Post-graduate Zoology Laboratory for the further examination of helminthic parasites. The examined GI helminthic parasites were collected, preserved and slide were prepared by standard methods. Identification of type of parasite infection was done based on the morphology of parasite. Obtained data were recorded and processed for the study of seasonal analysis of gastrointestinal helminthic fauna. The monthly data collected on prevalence of infection with GI helminth parasites of domesticated Ovis bharal for one year period was analysed and compared. Statistical analysis was performed by using standard method.

RESULTS AND DISCUSSION

The results of present study showed that out of the total animals (180) examined, 48.33 % were positive for helminthic infections. The helminthic infection consists of cestodes, trematodes and nematodes. Based on the seasonal findings, a significant difference was seen between the seasons. Monsoon had the highest proportion of the infection at 76.67, followed by the winter with 46.67%. Meanwhile, the lowest rate of infection was seen in the summer with only 21.67 % infection rate among sheep. The difference between the infection rate of the seasons was statistically significant (P < 0:05; Table 1).

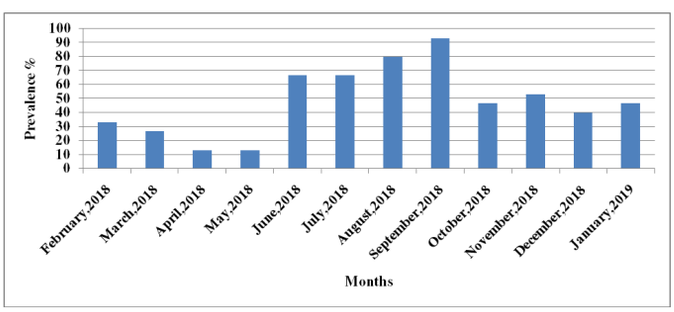
Seasons	Species	No. of the host Examined	No. of the host Infected	Prevalenceof helminths (%)
Summer (Feb.,2018May,2018)	*Ovis bharal*	60	13	21.67
Monsoon (June, 2018-Sept., 2018)	*Ovis bharal*	60	46	76.67
Winter (Oct.,2018 Jan., 2019)	*Ovis bharal*	60	28	46.67
Overall		**180**	**87**	**48.33**

Table 1: Season-wise prevalence of Helminth parasites of Ovis bharal during Februray, 2018 to January, 2019. (n=180)



Graph 1- Season-wise prevalence of Helminth parasites of Ovis bharal during Februray, 2018 to January, 2019.(n=180)

The monthwise prevalence of helminth parasites in Ovis bharal was also recorded as the highest infection was observed in the months of August (80.00%) , September (93.33%) and lowest helminthic infection was observed in the months of April (13.33%), May (13.33%) while the moderate infection was observed in the months of June (66.67%), July (66.67%), and October, November, December and January (46.67%,53.33%,40.00% and 46.67%) respectively. The difference between the infection rate of the months was statistically significant (P < 0:05; Graph.2).



Graph 2- Monthly prevalence of Helminth Parasites of Ovis bharal during Februray, 2018 to January, 2019.

According to the results obtained in this research the overall prevalence of helminths in sheep shows higher in rainy season followed by winter than in summer. This is in accordance with findings of other researchers. Similarly Katoch, et. al.(2000) from Mathura region reported hight incidence of Haemonchus sp. during rainy season. Result of Pathak and Pal, (2008) showed that prevalence of gastrointestinal parasite of goat was highest in monsoon (94.60%), moderate in summer (87.50%) and lowest in winter (63.15%).Varadharajan and Vijayalakshmi (2015) reported overall infection percentage was higher in rainy season (68.36%) followed by winter (60.84%) than in summer (55.30%). Bansal et.al. (2015), reported maximum prevalence of sheep and goat in monsoon (92.96 %) was recorded followed by winter (89.20 %) and summer (87.76 %). Nanware et.al.(2019), reported high incidence of infection of Moniezia Sp.and Stilesia Sp. in Monsoon season (79.16%; 70.83%) followed by winter season (58.33%; 52.08%) whereas infection was low in Summer season (33.33%; 31.25%) respectively. Recently the Alireza Salehi et.al,(2022) reported that the high helminthic infection in sheep in rainy season (30.28%) and lower in winter (9.16%). Heavy rainfall and high relative humidity predisposed to heavy parasitic infection (Hawkins, 1945). Higher infection during rainy season may also be attributed to suitable molarity of salt present in soil, an important factor for ecdysis. Therefore, present study clear that gastrointestinal helminthic fauna of sheep are highly prevalent in monsoon as compared to the other seasons.

CONCLUSION

Gastrointestinal helminth parasitic infection in sheep was the most important and serious problem in and around pune region. The study provides the baseline information about helminths of sheep in Pune District. Therefore, strategic deworming and appropriate animal health extension work should be practiced. Training of sheep farmers how they able to know anaemia and diarrhea on their animal and deworm with appropriate and correct dose of anthelmintic. Further epidemiological studies and survey on the existence of anthelmintic resistance development in the areas is required.

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